Rules and Regulations for the Classification of Ships, July 2011

Notice No. 3

Effective Date of Latest Amendments:

See page 1

Issue date: November 2011

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RULES AND REGULATIONS FOR THE CLASSIFICATION OF SHIPS, *July 2011*

Notice No. 3

This Notice contains amendments within the following Sections of the *Rules and Regulations for the Classification of Ships, July 2011.* The amendments are effective on the dates shown:

Part	***Chapter***	***Section***	***Effective date***
5	1	4	1 January 2012
5	15	1, 2	1 January 2012
6	2	13	1 January 2012
7	11	1, 2, 3, 4	1 January 2012

It will be noted that the amendments also include corrigenda, which are effective from the date of this Notice.

The *Rules and Regulations for the Classification of Ships, July 2011* are to be read in conjunction with this Notice No. 3. The status of the Rules is now:

Rules for Ships	Effective date:	July 2011
Notice No. 1	Effective dates:	1 July 2011
Notice No. 2	Effective dates:	1 January 2012 & Corrigendim
Notice No. 3	Effective dates:	1 January 2012

Part 5, Chapter 1

General Requirements for the Design and Construction of Machinery

Effective date 1 January 2012

■ *Section 4*
Machinery room arrangements

4.4 Ventilation

4.4.2 Machinery spaces of category A shall be ~~sufficiently~~ adequately ventilated so as to ensure that when machinery or boilers therein are operating at full power in all weather conditions, including heavy weather, a sufficient supply of air is maintained to the spaces for the safety and comfort of personnel and the operation of the machinery. Any other machinery space shall be adequately ventilated, as appropriate for the purpose of that machinery space.

Part 5, Chapter 15

Piping Systems for Oil Tankers

Effective date 1 January 2012

■ *Section 1*
General requirements

1.7 Arrangements for fixed hydrocarbon gas detection systems in double hull and double bottom spaces of oil tankers

1.7.1 In accordance with SOLAS 1974, as amended, Ch II-2/B, Reg. 4.5.7, double hull and double bottom spaces of oil tankers with a deadweight of 20 000 tonnes and above that are not provided with a constant operative inerting system are to be provided with a fixed hydrocarbon gas detection system.

1.7.2 Where a fixed hydrocarbon gas detection system is required by 1.7.1, it is to be of an approved type and it is to meet the requirements of Chapter 16 of the *International Code for Fire Safety Systems (FSS Code)*.

Existing sub-Sections 1.7 *to* 1.10 *have been renumbered* 1.8 *to* 1.11.

■ *Section 2*
Piping systems for bilge, ballast, oil fuel, etc.

2.7 Fore peak ballast tank

2.7.1 The fore peak tank can be ballasted with the system serving other ballast tanks within the cargo area, provided that:

(a) the fore peak tank is considered as a hazardous area;

(b) the vent pipe openings are located on open deck at an appropriate distance from sources of ignition. In this respect, the hazardous zones distances are to be defined in accordance with Pt 6, Ch 2,13.5;

(c) means are provided, on the open deck, to allow measurement of flammable gas concentrations within the fore peak tank by a suitable portable instrument;

(d) the sounding arrangement to the fore peak tank is direct from open deck; and

(e) the access to the fore peak tank is direct from open deck; alternatively, indirect access from the open deck to the fore peak tank through an enclosed space may be accepted, provided that:

    (i) in case the enclosed space is separated from the cargo tanks by cofferdams, the access is through a gas-tight bolted manhole located in the enclosed space and a warning sign is to be provided at the manhole, stating that the fore peak tank may only be opened after it has been proven to be gas free, or any electrical equipment which is not certified safe in the enclosed space is isolated.

(ii) where the enclosed space has a common boundary with the cargo tanks and is therefore a hazardous area, the enclosed space is to be well ventilated.

Part 6, Chapter 2

Electrical Engineering

Effective date 1 January 2012

■ *Section 13*
General requirements

13.5 Hazardous zones and spaces

13.5.7 The following zones or spaces are regarded as hazardous, **zone 1**:

(a) the interiors of spaces containing dangerous goods as defined by 13.5.5(d);
(b) unventilated spaces separated by a single bulkhead or deck from a cargo defined by 13.5.5(a);
(c) ventilated spaces containing pipework or equipment defined by 13.5.5(b) and (e);
(d) zones within a 1,5 m radius of ventilation outlets, hatches or doorways or other openings into spaces defined by (a), (b) or (c), or within 1,5 m of the ventilation outlets of spaces regarded by 13.7 as open areas and which contain the pipework or equipment defined by 13.5.5(b) or (e). Where the hazard results from flammable gas or vapour having a density relative to that of air of more than 0,75, the hazardous zone is considered to extend vertically downward to solid deck, or for a distance of 9 m, whichever is the lesser;
(e) zones on open deck, or semi-enclosed spaces on open deck, within 3 m of the ventilation outlets of cargo tanks defined in 13.5.5 (a), which permit the flow of small volumes of vapour or gas mixtures caused by thermal variation;
~~(e)~~ (f) zones within a 1,5 m radius of flanged joints, or glands or other openings defined by 13.5.5(b); in the case of gas or vapour having a relative density of more than 0,75, the hazardous zone is considered to extend vertically downwards as described under (d);
~~(f)~~ (g) zones within a 1,5 m radius of flanged joints, or glands or other openings defined by 13.5.5(e) and (f);
~~(g)~~ (h) zones within a 1,5 m radius of bunds or barriers intended to contain spillage of liquids defined by 13.5.5(a);
~~(h)~~ (j) zones on open deck within a 1,5 m radius of any opening into a space defined by (a) or (b); and
~~(i)~~ (k) enclosed or semi-enclosed spaces with direct opening into a **zone 1** hazardous location.

13.5.8 The following zones or spaces are regarded as hazardous, **zone 2**:

(a) ventilated spaces separated by a single bulkhead or deck from a **zone 0** space;
(b) zones on open deck extending 1,5 m beyond those defined by 13.5.7(d), (e), (f), (g) or (h);
(c) zones on open deck extending 2 m beyond those defined by 14.5.7(e);
~~(c)~~ (d) zones within a 1,5 m radius of ventilation inlets serving spaces defined by 13.5.7(a) or (c); and
~~(d)~~ (e) enclosed or semi-enclosed spaces with direct opening into a **zone 2** hazardous location.

Part 7, Chapter 11

Arrangements and Equipment for Environmental Protection

Effective date 1 January 2012

■ *Section 1* General requirements

1.1 Application

1.1.2 Compliance with this Chapter is optional. A ship meeting the requirements of this Chapter will be eligible for ~~the EP~~ **ECO** class notation, which will be recorded in the *Register Book*.

1.1.3 Where a ship is classed with another IACS Member and all the requirements of this Chapter are met, a Statement of Compliance will be issued. At the specific request of the Owner, the descriptive note ~~EP~~ ECO may be recorded in the *Register Book*.

1.1.5 LR is to be advised of any matter that relates to the environmental performance of the ship that would affect the assignment of the ~~EP~~ **ECO** class notation.

1.2 ~~EP~~ ECO class notation: minimum requirements and additional characters

1.2.1 Section 2 states the minimum requirements to be met for assignment of the ~~EP~~ **ECO** notation.

1.2.2 Section 3 contains additional requirements. Ships complying with these requirements will be eligible for one or more of the following associated supplementary characters, as applicable:

A	Anti-fouling coatings.
~~**B, Bt**~~	~~Ballast water management.~~
BWT	Ballast water treatment.
~~**Crm**~~ **CRM**	Cargo residue minimisation.
~~**Ede**~~ **EEDI**	Energy efficiency design index.
~~**Eop**~~ **EEOI**	Energy efficiency operational indicator.
~~**G**~~ **GW**	Grey water.
~~**I**~~ **IHM**	Inventory of hazardous materials.
~~$\mathbf{N_1, N_2, N_3, N_e}$~~	
$\mathbf{NO_{x1}, NO_{x2}, NO_{x3}}$	Oxides of nitrogen (NO_x) exhaust emissions.
~~**O**~~ **OW**	Oily bilge water.
P	Protected oil tanks.
R	Refrigeration systems.
~~**S**~~ **DIST,** $\mathbf{SO_x}$	Oxides of sulphur (SO_x) exhaust emissions.
~~**Sp**~~	~~Swimming pool water.~~
~~**Tc**~~ **TC**	Enhanced tank cleaning.
~~**Vc, Vp**~~ **VECS**	
VECS-L, VOC-R	Vapour emission control systems (tankers only).

1.3 Information to be submitted

1.3.2 For existing ships the certificates, information and plans listed in 1.3.3 to 1.3.5 are to be submitted for approval prior to the ~~EP~~ ECO Initial Survey for assignment of the ~~EP~~ ECO notation, *see* 4.1.1. For new ships, information and plans listed in 1.3.3 and 1.3.5 are to be submitted for approval prior to the ~~EP~~ ECO Initial Survey. However, the operational procedures listed in 1.3.4 may be submitted up to six months after the ship enters into service.

1.3.4 Operational procedures:

(a) NO_x emission control, as applicable.
(b) Oil fuel management for the control of SO_x emissions.
(c) Refrigerant management including adding and recovering refrigerant charge, leak detection and sample log book.
(d) Retention and disposal of spilled or spent foam, chemical or liquid based fire-fighting media, as applicable.
(e) Oil pollution prevention measures.
(f) Garbage management.
(g) Sewage treatment and discharge control.
(h) Precautionary measures to minimise the transfer of non-native organisms in ballast water.
(j) Ballast water management, as applicable.
(k) Energy management plan.
(l) Vapour management plan (tankers carrying crude oil, petroleum products or volatile chemical cargoes only).
(m) Grey water treatment or holding and discharge (supplementary character ~~**G**~~ **GW** only).
(n) Maintenance of inventory of hazardous materials (supplementary character ~~**I**~~ **IHM** only).
~~(o) Neutralisation of chemically disinfected swimming pool or other recreational waters (supplementary character **Sp** only).~~

1.3.5 Information and plans:

(a) SERS registration number or statement of membership of alternative scheme from IACS Member service provider.
(b) Details of engine type, rated power and intended use for all installed engines.
(c) Details of NO_x control arrangements, as applicable.
~~(d) Fuel consumption records.~~
~~(e) Emission footprint calculation records.~~
~~(f)~~(d) Details and location of each permanently installed refrigeration systems (including those used for cargo temperature control, air conditioning, provision rooms and chiller units).
~~(g)~~(e) Mass of refrigerant charge in each system and the refrigerant designation (e.g. R-134a) in accordance with ISO 817.
~~(h)~~(f) Refrigerant plant general arrangement drawing showing number and locations of the refrigerant leak detectors.
~~(j)~~(g) Details of fire-extinguishing media to be used in fixed fire-fighting systems and portable extinguishers.
~~(k)~~(h) Bilge holding, waste oil and sludge tank capacities and piping arrangements.

~~(l)~~ (j) Arrangements of non-cargo oil loading and discharge connections together with associated drip trays and drainage systems.
~~(m)~~(k) Oil fuel storage, settling and service tank high level alarms/overflow systems.
~~(n)~~(l) Cargo and ballast tank arrangements (tankers only).
~~(o)~~(m) Cargo and ballast piping system plans, including cargo tank overfill prevention arrangements (tankers only).
~~(p)~~(n) Arrangements of tanker cargo manifolds together with associated drip trays and drainage systems.
~~(q)~~(o) Details of sewage treatment and handling systems.
~~(r)~~(p) Capacity of sewage holding and/or treatment system.
~~(s)~~(q) Maximum numbers of crew and passengers.
~~(t)~~(r) Details of incinerator arrangements, as applicable, associated piping systems, control and monitoring equipment.
~~(u)~~(s) Hull coating system.
~~(v)~~(t) Ballast water treatment arrangements, as applicable (for supplementary ~~**Bt**~~ **BWT** character only).
~~(w)~~(u) Energy Efficiency Design Index calculation records or certificate (supplementary character ~~**Ede**~~ **EEDI** only).
~~(x)~~(v) Energy Efficiency Operational Indicator calculation records (supplementary character ~~**Eop**~~ **EEOI** only).
~~(y)~~(w) Details of grey water treatment plant and effluent quality (for supplementary ~~**G**~~ **GW** character only).
~~(z)~~(x) Inventory of hazardous materials (supplementary character ~~**I**~~ **IHM** only).
~~(aa)~~(y) Arrangements for protected oil tanks (for supplementary **P** character only).
~~(ab)~~(z) Shadow area diagrams (supplementary character ~~**Tc**~~ **TC** only).
~~(ac)~~(aa) Details of self-contained vapour recovery systems, where fitted (for supplementary ~~**Vp**~~ **VOC-R** character only and **VECS**, **VECS-L** characters, as applicable).
~~(ad)~~(ab) Any information relating to the environmental performance of the ship, which may influence the assignment of the ~~**EP**~~ **ECO** notation.

■ *Section 2*
Environmental Protection (~~EP~~ ECO) class notation

2.1 General

2.1.1 It is a prerequisite for assignment of the ~~**EP**~~ **ECO** notation that the ship:

~~(a) complies with the Antifouling Convention, the Ballast Water Convention and all adopted Annexes of MARPOL, whether ratified or not, relevant to the ship;~~
(a) complies with the Anti-fouling Convention, the Ballast Water Convention, except as modified by 2.11.4, and all Annexes to MARPOL 73/78, as amended, applicable to the ship;
(b) has a valid Safety Management Certificate (SMC), in accordance with the ISM Code issued by the Flag State Administration with which the ship is registered or a duly authorised organisation complying with Resolution A.739(18) and authorised by the National Authority with which the ship is registered; and
(c) is enrolled in LR's Ship Emergency Response Service (SERS) or the equivalent scheme of another IACS Member.

~~*2.1.4* Where a ship, by virtue of its gross tonnage, is not required by the Ballast Water Convention to have certification, a ballast water management plan and record book are to be maintained onboard.~~

~~*2.1.5*~~ *2.1.4* Where a ship, by virtue of its gross tonnage is not required to have a SMC, it is exempt from 2.1.1(b).

~~*2.1.6*~~ *2.1.5* High speed craft, as defined in LR's *Rules and Regulations for the Classification of Special Service Craft,* will be the subject of special consideration.

2.1.6 Offshore supply ships, as defined in Pt 7, Ch 4 of the Rules for Ships, will be the subject of special consideration.

2.3 Oxides of sulphur (SO_x)

2.3.2 The maximum sulphur content of oil fuel to be used on board is not to exceed ~~3,0~~ 3,00 per cent m/m.

2.4 Energy management

~~*2.4.1* An energy management plan is to be developed and implemented in accordance with the relevant IMO or OCIMF Energy Efficiency and Fuel Management recommendations.~~

~~*2.4.2* The energy management plan and relevant records to demonstrate compliance are to be retained onboard.~~

~~*2.4.3* For new ships, the energy management plan is to be available on delivery.~~

2.4.1 An energy management plan (SEEMP) is to be developed in accordance with the relevant IMO Guidelines (MEPC Circ.683), and subsequently be reviewed and endorsed by LR.

2.4.2 The SEEMP is to be implemented on board.

2.4.3 The SEEMP and associated records are to be retained on board.

2.4.4 For new ships, the SEEMP is to be available upon delivery.

~~2.5 Fuel consumption and emissions footprint~~

~~*2.5.1* Annual fuel consumption is to be established for existing ships and for new ships at the end of their first year in service. Fuel consumption is to be based on bunker delivery notes complying with MARPOL Annex VI, Regulation 18.~~

~~*2.5.2* The annual emissions of NO_x, SO_x and CO_2 in the exhaust gas are to be calculated using relevant monitoring and/or calculation methods acceptable to LR.~~

~~*2.5.3* Relevant records to demonstrate amounts and methods of measurement or estimation are to be retained onboard the vessel.~~

~~2.6~~ 2.5 Refrigeration systems

Existing paragraphs 2.6.1 *to* 2.6.6 *have been renumbered* 2.5.1 *to* 2.5.6.

~~*2.6.7*~~ *2.5.7* Refrigerant leakage is to be minimised by leak prevention and periodic leak detection procedures. The frequency of leak detection and the maximum allowable annual leakage rate is ~~dependant~~ dependent on the charge of each system and is specified in Table 11.2.1.

Existing paragraphs 2.6.8 *and* 2.6.9 *have been renumbered* 2.5.8 *and* 2.5.9.

~~*2.6.10*~~ *2.5.10* Procedures for refrigerant management including adding and recovering refrigerant charge, leak detection and the means adopted to control the loss and leakage of refrigerants are to be established and implemented ~~effectively~~.

Existing paragraphs 2.6.11 *and* 2.6.12 *have been renumbered* 2.5.11 *and* 2.5.12.

~~*2.6.13*~~ *2.5.13* Records demonstrating the ~~effective~~ implementation of the operational procedures specified in ~~2.6.10~~ 2.5.10, as applicable, are to be maintained. These records are to be kept on board for a minimum period of three years, in a readily accessible form, and are to be available for inspection by LR Surveyors, as required.

Existing paragraphs 2.6.14 *has been renumbered* 2.5.14.

~~*2.6.15*~~ *2.5.15* All personnel involved in the following activities must be suitably experienced or possess an applicable qualification:

(a) installation, servicing or maintenance of the refrigeration equipment covered by the ~~**EP**~~ **ECO** Notation;
(b) checking such equipment for any leakages of refrigerant gases; or
(c) repairing, or carrying out work to prevent, such leakages.

~~2.7~~ 2.6 Fire-fighting systems

Existing paragraphs 2.7.1 *and* 2.7.2 *have been renumbered* 2.6.1 *and* 2.6.2.

~~2.8~~ 2.7 Oil pollution prevention

~~*2.8.1*~~ *2.7.1* All ships are to comply with the requirements of ~~2.8.2 to 2.8.12~~ 2.7.2 to 2.7.12. In addition, tankers are to comply with the requirements of ~~2.9~~ 2.8.

Existing paragraphs 2.8.2 *to* 2.8.5 *have been renumbered* 2.7.2 *to* 2.7.5.

~~*2.8.6* Leakages and waste oil from machinery and equipment are to be collected in a dedicated waste oil tank prior to disposal ashore or incineration. This waste oil tank is to be separate from the sludge tank specified in MARPOL Annex I, Regulation 2. The volume of the waste oil tank is to be of sufficient capacity to hold a complete lubricating oil charge from the largest engine used for propulsion or electrical generating purposes.~~

2.7.6 The tank arrangement and engine room management procedures are to ensure that any leakages and waste oil from machinery and equipment are collected prior to disposal ashore or incineration. At all times, there is to be sufficient capacity to store a complete lubricating oil charge from the largest engine used for propulsion or electrical generating purposes. The tank arrangement is to allow the lubricating oil charge subsequently to be renovated or to be discharged ashore.

~~*2.8.7*~~ *2.7.7* For those ships which only operate on distillate fuel, the ~~waste oil~~ tank arrangements in 2.7.6 and sludge tanks may be combined to form a single tank. Where such a combined tank is fitted, the total capacity is to be equal to or greater than the aggregated total of the required individual tank capacities.

~~*2.8.8*~~ *2.7.8* The bilge holding tank, the ~~waste oil tank~~ tank arrangements in 2.7.6 and the sludge tank are to be arranged to facilitate the periodic removal of accumulated sediments and other material.

~~*2.8.9*~~ *2.7.9* Discharge piping systems to deck from the bilge holding tank, and the ~~waste oil tank~~ tank arrangements in 2.7.6, are to be separate from the oil fuel loading and transfer systems. ~~The bilge holding tank and waste oil tank~~ Their piping systems are to be terminated with the standard discharge connections specified in MARPOL Annex I, Regulation 13.

Existing paragraphs 2.8.10 *and* 2.8.11 *have been renumbered* 2.7.10 *and* 2.7.11.

~~*2.8.12*~~ *2.7.12* Procedures covering the handling of all oils and oily wastes are to be established and implemented ~~effectively~~. As a minimum, these are to cover:

(a) loading, storage and transfer of oil fuels, lubricants, hydraulic oil, thermal heating oil and drummed oil products;
(b) storage, transfer, discharge and disposal of oily mixtures contained in the ship's sludge, bilge holding and waste oil tanks and machinery space bilges;
(c) recovery of any oil spilled on decks; and
(d) prevention of leakage of fuel and lubricating oils during fuel changeovers in accordance with Regulation 14(6) of MARPOL Annex VI.

~~2.9~~ 2.8 Arrangements on ships carrying oil cargoes in bulk

Existing paragraphs 2.9.1 *to* 2.9.4 *have been renumbered* 2.8.1 *to* 2.8.4.

~~*2.9.5*~~ *2.8.5* A ~~screw-down~~ non-return valve is to be provided to isolate the cargo piping system from the sea connections.

Existing paragraphs 2.9.6 *and* 2.9.7 *have been renumbered* 2.8.6 *and* 2.8.7.

~~*2.9.8*~~ *2.8.8* Procedures covering ship to ship transfer of bulk liquid cargoes are to be established~~,~~ for ships engaged in the transfer of oil cargo at sea (STS Operations as defined in MARPOL Annex 1 Ch 8 Reg 40). These are to be agreed with LR, and ~~effectively~~ implemented.

~~2.10~~ 2.9 Garbage handling and disposal

~~2.10.1~~ 2.9.1 A garbage management plan, developed in accordance with IMO MEPC Resolution 71(38), is to be available and ~~effectively~~ implemented. This plan, *inter alia*, shall include:

(a) identification of the sources of garbage;
(b) means of minimising garbage production;
(c) procedures for the safe and hygienic collection, segregation, storing, processing and disposal of garbage, including the use of the equipment (compactors, comminuters, incinerators or other devices) on board. These procedures are to cover all garbage generated during the normal operation of the ship. The disposal of the following materials is to be specifically covered:
  - Cargo residues.
  - Cargo associated wastes.
  - Waste oil.
  - Paint and painting materials.
  - Medical wastes.
  - Large metal objects such as oil drums and machinery components.
  - Ropes: metal, synthetic or natural fibre.
  - Rust/scale debris.
  - Ballast tank sediments.
  - Equipment containing refrigerants.

Existing paragraphs 2.10.2 *and* 2.10.3 *have been renumbered* 2.9.2 *and* 2.9.3.

~~2.11~~ 2.10 Sewage treatment

Existing paragraphs 2.11.1 *and* 2.11.2 *have been renumbered* 2.10.1 *and* 2.10.2.

~~2.11.3~~ 2.10.3 Procedures for the operation of a sewage treatment system, including the certification of performance, are to be established and ~~effectively~~ implemented. Records are to be maintained of maintenance, repair, remedial work and disinfectant ~~closing~~ dosing rates.

Existing paragraphs 2.11.4 *to* 2.11.7 *have been renumbered* 2.10.4 *to* 2.10.7.

~~2.11.8~~ 2.10.8 Records are to be maintained detailing discharges from the holding tank. These ~~should~~ are to include:

(a) the date, location and quantity of sewage discharged from the holding tank either ashore or at sea in accordance with MEPC Resolution.157(55);
(b) rate of discharge of raw sewage;
(c) distance from land and ship's speed, when sewage is discharged to sea.

Existing paragraphs 2.11.9 *and* 2.11.10 *have been renumbered* 2.10.9 *and* 2.10.10.

~~2.11.11~~ 2.10.11 Procedures for the cleaning and safe entry of sewage treatment systems and holding tanks, including the use of suitable personal protective equipment, are to be provided and implemented ~~effectively~~.

~~2.12~~ 2.11 Hull anti-fouling systems

~~2.12.1~~ 2.11.1 The application of anti-fouling systems containing TBT is prohibited.

~~2.13~~ 2.12 Ballast water

~~*2.13.1* All ships carrying ballast water are to implement precautionary measures to minimise the translocation of non-native organisms in their ballast water unless it can be demonstrated that the risk of translocation of non-native organisms in their ballast water and sediments is minimal.~~

~~*2.13.2* Precautionary measures to minimise the translocation of non-native organisms are to encompass the recommendations in IMO Resolution MEPC 127(53) and, as a minimum, are to include:~~

~~(a) procedures for minimising the uptake of aquatic organisms, pathogens and sediments during ballasting, by limiting (or minimising) ballasting in situations where the numbers of aquatic organisms are likely to be increased locally. For example:~~
  - ~~in darkness, when bottom-dwelling organisms may rise up the water column;~~
  - ~~in very shallow water;~~
  - ~~in locations where propellers may stir up sediment;~~
  - ~~and/or in areas specified by the Port State for avoidance or restriction of ballasting;~~

~~(b) monitoring of sediment build-up and, where practical, routine cleaning of ballast tanks to remove sediments;~~
~~(c) disposal of sediments;~~
~~(d) planning uptake and discharge of ballast water such that where ballast needs to be taken on and discharged in the same port, discharge of ballast loaded in another port is to be avoided, where practicable.~~

2.12.1 All ships carrying ballast water, to which the Ballast Water Convention applies, are to have on board, and to implement, a ballast water management plan approved by LR or by another IACS member.

2.12.2 The ballast water management plan is to meet the requirements of Regulation B1 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 and encompass the recommendations in IMO Resolution MEPC 127(53).

2.12.3 For new ships intending to undertake ballast water exchange, the guidance on ballast water exchange design and construction standards within IMO Resolution MEPC 149(55) is to be taken account of, as far as practicable.

2.12.4 A ship should carry out ballast water exchange in accordance with the convention; however, a ballast water treatment system is not required to be installed and used until such time as required by Regulation B-3 of the Convention and the Convention has entered into force.

~~2.14~~ 2.13 VOC management

~~*2.14.1*~~ *2.13.1* Tankers carrying crude oil are required to develop and ~~effectively~~ implement a VOC Management Plan in accordance with IMO Guidelines for the Development of a Volatile Organic Compound (VOC) Management Plan for tankers carrying crude oil (Resolution MEPC.185(59)) that has been approved by LR. ~~vapour management plan which is to be agreed with LR.~~

Section 3
Supplementary characters

3.2 Ballast water ~~management – B, Bt~~ Treatment – BWT characters

~~*3.2.1* For assignment of the **B** character, a ballast water management plan approved by LR, another IACS or Member or the Administration with which the ship is registered, is to be onboard and implemented effectively.~~

~~*3.2.2* The ballast water management plan is to be developed in accordance with IMO Resolution MEPC 127(53) and take note of the safety considerations in IMO Resolution MEPC 124(53).~~

~~*3.2.3* For new ships intending to undertake ballast water exchange, the guidance on ballast water exchange design and construction standards within IMO Resolutions MEPC 149(55) is to be taken account of, to the satisfaction of LR.~~

~~*3.2.4*~~ *3.2.1* Where a ballast water treatment system is installed, the character ~~**Bt**~~ **BWT** will be assigned, provided that the treatment system is installed, utilised and approved in accordance with MEPC 174(58).

~~*3.2.5*~~ *3.2.2* A ballast water record book for the purpose of recording all ballast water operations and use of the treatment system~~, where applicable,~~ is to be available ~~onboard~~ on board and maintained.

~~*3.2.6*~~ *3.2.3* New ships are to take account of the guidance on design and construction to facilitate sediment control within IMO Resolution MEPC 150(55), as far as is practicable.

3.3 Cargo residue minimisation – ~~Crm~~ CRM character

3.3.1 For assignment of the ~~Crm~~ CRM character, cargo residue is to be minimised.

3.4 Energy Efficiency Design Index – ~~Ede~~ EEDI

3.4.1 For assignment of the **EEDI** character, a Ship Energy Efficiency Design Index is to be submitted to and approved by LR.

~~*3.4.1*~~ *3.4.2* ~~For assignment of the **Ede** character, the~~ The Energy Efficiency Design Index is to be established in accordance with the IMO Interim Guidelines on the Method of Calculation of the Energy Efficiency Index for New Ships and verified in accordance with Lloyd's Register's procedure for verifying **EEDI** values.

3.5 Energy Efficiency Operational Indicator – ~~Eop~~ EEOI

3.5.1 For assignment of the ~~**Eop**~~ **EEOI** character, the ship Energy Efficiency Operational Indicator is to be established in accordance with the IMO Guidelines for voluntary use of the Ship Energy Efficiency Operational Indicator.

3.5.3 Records ~~should~~ are to be retained to show the calculation methodology.

3.6 Grey water – ~~G~~ GW character

3.6.1 For assignment of the ~~**G**~~ **GW** character where a plant for the treatment of grey water is installed, the plant discharge effluent is to meet the standards specified in 3.6.2 or 3.6.3, as applicable. The ~~**G**~~ **GW** character will also be assigned where grey water is retained onboard in dedicated holding tank(s) for discharge ashore, subject to the requirements specified in 3.6.4 to 3.6.9 being met.

3.6.9 Procedures for the cleaning and safe entry of grey water treatment systems and holding tanks, including the use of suitable personal protective equipment, are to be provided and implemented ~~effectively~~.

3.7 Inventory of hazardous materials – ~~I~~ IHM character

3.7.1 For assignment of the ~~I~~ IHM character, the ship is to possess an inventory of hazardous materials in compliance with Regulation 5 of the ~~IMO~~ *Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships*.

3.7.3 Procedures covering maintenance of the inventory of hazardous materials throughout the ship's life are to be established and ~~effectively~~ implemented. The procedures are to address, *inter alia*, new installations containing hazardous materials specified in appendices 1 and 2 of the *Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships* and relevant changes in the ship's structure and equipment.

3.8 Oxides of nitrogen ~~(NO_x) – N_1, N_2, N_3~~ NO_{x1}, NO_{x2}, NO_{x3} characters

3.8.1 For assignment of the ~~N_1 or N_2~~ NO_{x1} or NO_{x2} character, the total weighted value of NO_x emissions from all installed diesel engines defined within 2.2.1 is not to exceed 80 per cent of the total weighted NO_x emission limits specified in MARPOL Annex VI, Regulation 13, applicable to the date of construction of the ship.

3.8.3 For ships constructed before 1 January 2011, the ~~$\mathbf{N_1}$~~ $\mathbf{NO_{x1}}$ character will be assigned when:

$$\frac{WAEV_{[cert]}}{WAEV_{[IMO]}} \leq 0,8 \text{ MARPOL Annex VI Tier 1 } NO_x$$

emission limits.

For ships constructed on or after 1 January 2011, the ~~$\mathbf{N_2}$~~ $\mathbf{NO_{x2}}$ character will be assigned when:

$$\frac{WAEV_{[cert]}}{WAEV_{[IMO]}} \leq 0,8 \text{ MARPOL Annex VI Tier 2 } NO_x$$

emission limits.

3.8.4 For assignment of the ~~$\mathbf{N_3}$~~ $\mathbf{NO_{x3}}$ character, engines and associated NO_x emission abatement systems are to be certified as meeting the Tier 3 NO_x emission limits specified in MARPOL Annex VI, Regulation 13.

3.8.6 Procedures covering the use and maintenance of the equipment and systems specified in 3.8.1 are to be established and ~~effectively~~ implemented. Records are to be maintained which demonstrate the operation of the equipment and systems and the resultant level of NO_x emissions to the atmosphere.

~~3.9 Oxides of nitrogen (NO_x) – N_e character~~

~~*3.9.1* The $\mathbf{N_e}$ character will be assigned to ships constructed before 1 January 2000, when the NO_x emissions from installed diesel engines over 130 kW, other than those used solely for emergency purposes, meet the Tier 1 NO_x emission limits specified in MARPOL Annex VI, Regulation 13.~~

~~3.10~~ 3.9 Oily bilge water – ~~O~~ OW character

~~*3.10.1*~~ *3.9.1* For assignment of the ~~**O**~~ **OW** character, all drainage from machinery space bilges is to be discharged ashore, except under exceptional circumstances.

Existing paragraphs 3.10.2 *to* 3.10.5 *have been renumbered* 3.9.2 *to* 3.9.5.

~~3.11~~ 3.10 Protected oil tanks – P character

Existing paragraphs 3.11.1 *to* 3.11.5 *have been renumbered* 3.10.1 *to* 3.10.5.

~~3.12~~ 3.11 Refrigeration systems – R character

Existing paragraphs 3.12.1 *to* 3.12.3 *have been renumbered* 3.11.1 *to* 3.11.3.

~~3.13~~ 3.12 Oxides of sulphur ~~(SO_x) – S~~ DIST, SOx character

3.12.1 For assignment of the **DIST** character, ships must meet the requirements of Lloyd's Register's Descriptive Note **DIST(M, AB, I, IG)**.

~~*3.13.1*~~ *3.12.2* For assignment of the ~~**S**~~ **SOx** character, all fuel used ~~onboard~~ on board is to be:

(a) distillate with a sulphur content of less than ~~0,1~~ 0,10 per cent m/m; or

(b) an alternative fuel or a hybrid fuel management solution which achieves the equivalent emission limit to ~~0,1~~ 0,10 per cent sulphur m/m.

~~*3.13.2*~~ *3.12.3* The sampling, fuel sulphur analysis methods and verification requirements stipulated in 2.3.4 and 2.3.5 are to be complied with.

~~3.14 Swimming pool water – Sp character~~

~~*3.14.1* For assignment of the **Sp** character, swimming pool or other recreational water which has been treated with a chemical disinfectant, is to be neutralised prior to discharge overboard where residual disinfectant has the potential to be present.~~

~~*3.14.2* Procedures covering the neutralisation process specified in 3.14.1 are to be established and implemented effectively. Records are to be maintained to demonstrate neutralisation of chemically disinfected swimming pool or other recreational waters prior to discharge overboard.~~

~~3.15~~ 3.13 Enhanced tank cleaning – ~~Tc~~ TC character

~~*3.15.1*~~ *3.13.1* For the assignment of the ~~**Tc**~~ **TC** character, oil and chemical tankers are to be provided with tank washing equipment meeting the standards specified in ~~3.15.2 to 3.15.8~~ 3.13.2 to 3.13.8.

Existing paragraphs 3.15.2 *to* 3.15.8 *have been renumbered* 3.13.2 *to* 3.13.8.

~~3.16~~ 3.14 Vapour emission control systems – ~~Vc and Vp~~ VECS, VECS-L, VOC-R characters

~~*3.16.1*~~ *3.14.1* ~~For assignment of the **Vc** or **Vp** character tankers~~ Tankers carrying crude oil, petroleum products or chemicals having a flash point not exceeding 60°C (closed-cup test) will be assigned the ~~**Vc** or **Vp** character~~ **VECS**, **VECS-L**, **VOC-R** character(s), provided the ~~provisions~~ requirements of ~~either 3.16.2 or 3.16.3 are complied with~~ 3.14.2, 3.14.3 and 3.14.4 respectively are complied with, as applicable.

~~3.16.2~~ 3.14.2 For assignment of the ~~**Vc**~~ **VECS** character, a vapour emission control system is to be fitted which has been designed and constructed in accordance with the requirements of USCG 46, CFR 39 or the IMO Standards for Vapour Emission Control Systems (MSC Circular 585). A certificate or statement of compliance issued by LR or a competent authority recognised by LR is to be provided. As an alternative, a self-contained vapour recovery system, which is of a type approved by LR and which achieves equivalent performance to the systems above, may be fitted.

3.14.3 For assignment of the **VECS-L** character, a vapour emission control system is to be fitted, which, in addition to 3.13.2, has been designed and constructed to meet the requirements for vapour balancing in accordance with USCG 46, CFR 39.40 for service vessels.

~~3.16.3~~ 3.14.4 For assignment of the ~~**Vp**~~ **VOC-R** character, a self-contained system capable of preventing vapour emission formation during loading is to be fitted. This vapour emission prevention system is to be of a type approved by LR and is to reduce vapour emission formation by at least 75 per cent (v/v) as compared to an equivalent ship to which no vapour emissions prevention system has been fitted.

■ *Section 4*
Survey requirements

4.1 Initial Survey and Audit

4.1.1 Following satisfactory review of the plans and other information submitted, (*see* 1.3), an ~~**EP**~~ **ECO** Initial Survey is to be undertaken for ships under construction or in service.

4.1.2 At the ~~**EP**~~ **ECO** Initial Survey, the Surveyor is to be satisfied that the requirements of these Rules, including those relating to any requested supplementary characters, are complied with. The Surveyor is to verify that the hull and machinery arrangements are in accordance with the approved documentation. The installed equipment, together with associated control and alarm systems, is to be demonstrated under working conditions.

4.1.3 Following the successful completion of the Initial Survey, the ~~**EP**~~ **ECO** notation may be assigned to a ship. The ~~**EP**~~ **ECO** notation will be valid, in the first instance, for a period not exceeding 12 months. During this period, an audit of the procedures as required by these Rules is to be undertaken. This audit is to be performed after the procedures have been fully implemented, subjected to internal audit and have generated at least 3 months of records under in-service conditions.

4.1.4 Audits are to confirm by direct observation, examination of internal audit reports and scrutiny of records that each of the procedures ~~have~~ has been implemented ~~effectively~~ over the preceding period. It is also to be verified that:

(a) the required resources and equipment have been provided; and
(b) the ship's staff are aware of their duties and responsibilities, and can perform the assigned tasks.

4.2 Periodical Surveys and Audits

4.2.1 ~~**EP**~~ **ECO** Annual Surveys and Audits are to be held on all ships to which the ~~**EP**~~ **ECO** notation applies within three months of each anniversary of assignment of the full ~~**EP**~~ **ECO** notation.

4.2.2 At the ~~**EP**~~ **ECO** Annual Survey and Audit, the Surveyor is to be satisfied that the arrangements and equipment comply with these Rules and operating procedures have been implemented ~~effectively~~. As far as possible, the installed equipment, together with associated control and alarm systems, are to be demonstrated under working conditions. Additionally:

(a) where changes to arrangements or equipment fitted to meet the requirements of these Rules have been made, it is to be verified that these changes are in accordance with approved documentation; and
(b) records for the preceding 12 months are to be reviewed.

4.2.3 ~~**EP**~~ **ECO** Audits are to be undertaken in accordance with the requirements given in 4.1.4.

4.2.4 Where the periodical surveys and audits are not completed in accordance with 4.2.1, the ~~**EP**~~ **ECO** Notation will be suspended. Re-instatement will be subject to surveys being held, as directed by the Committee, appropriate to the age of the ship and the circumstances of the case.

4.3 Change of company

4.3.1 Where the company (as defined in the ISM Code) changes, the ~~**EP**~~ **ECO** notation will be suspended.

4.3.4 The ~~**EP**~~ **ECO** notation will be re-assigned following successful completion of the audit provided that the ship has a valid Safety Management Certificate (SMC) and the general requirements given in 2.1.1 are complied with.

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Published by Lloyd’s Register
Registered office
71 Fenchurch Street, London, EC3M 4BS
United Kingdom